AERMOD Guidelines:

All permit compliance demonstrations based on refined modeling submitted to BAQ after December 9, 2006 must employ the regulatory guideline model, AERMOD, rather than the outdated ISCST3 model.

Please adhere to the following when submitting AERMOD modeling to BAQ:

1. **Modeling files**: Files should be submitted on a CD with the application. They should include, at a minimum, all AERMOD and BPIP-Prime input (data) files. If Beeline Software's BEEST interface was used, please submit ".bst" files as well. AERMOD and BPIP-Prime output files may be included in the submission as they may facilitate BAQ's modeling review in some cases. [Note re: BPIP-Prime: if the modeling project was divided into different runs (per pollutant, for example), all the buildings should be included in a comprehensive run of BPIP-Prime, and the output of that run used in each of the individual AERMOD runs.]

2. **UTM Coordinates**: All coordinates (for sources, buildings, receptors, etc.) should be in UTM's. Submissions with plant-relative coordinates will not be accepted unless prior arrangements have been made with BAQ. [Note: AERMOD vendor software may contain an algorithm that will convert plant-relative coordinates to UTM's.] Please state the datum upon which the coordinates are based (NAD83, for example).

3. **Meteorological Data**: BAQ has prepared meteorological data sets for use in AERMOD runs for facility sites in SC. These files include both surface (".sfc") and profile (".pfl") data for 1987-91 for the same stations previously used with ISCST3 model runs in SC. The files can be downloaded at http://www.scdhec.net/environment/baq/modeling.aspx. Selection of the proper data set depends on the facility location and should be based on Table 5.1, page 34 of the Air Quality Modeling Guidelines. Please note that using these data precludes the need to run AERMET, the AERMOD meteorological preprocessor (AERMET was used to prepare the data sets).

4. **AERMAP elevations**: During a modeling review, BAQ will normally extract elevations from the DEM files for all objects (sources, buildings, etc). However, if a facility desires to use elevations from an alternate source (for example, building elevations from an official site survey in the case of a leveled site in hilly terrain), such an intention should be explicitly stated in the application. In addition, the substitute elevations should be supplied and their source cited.

5. **Receptor Grid**: Due to much longer run times for AERMOD vs. ISCST3, it should be acceptable in most cases to use a receptor grid extending to a reduced range of 1.5 km with a spacing of 100 meters (except 50 meters along the fence line) in lieu of a grid extending to 5 km as suggested in the Air Quality Modeling Guidelines. However, if a range of 1.5 km is used, it is the responsibility of the facility to insure that the maximum modeled concentration occurs within that range.

6. A few **SOURCE** reminders:

a) **Horizontal and Raincapped Sources**:

For both, set exit velocity to 0.001 m/s.

If not subject to downwash (GEP stack):

- an adjusted (larger) diameter may be used to preserve buoyancy
- stack tip downwash should be turned off
- if rain-capped, reduce height by 3 stack diameters

If subject to downwash (non-GEP stack):

- no additional adjustments

b) **Sources emitting at ambient temperature**: Use actual hourly temperatures from the meteorological data rather than an assumed constant temperature (unless the source is a vent that actually does emit at a steady temperature close to that inside the facility). To do this, set the exit temperature to 0 (zero) degrees Kelvin. This triggers AERMOD to use the actual temperatures.

Questions or comments ? Please direct them to John Glass, Manager of BAQ's Air Modeling Section (803-898-4074, glassjp@dhec.sc.gov).